

## **SOFT CHIP MODEM**

**Related Applications;** the present invention is a continuation of provisional patent application number 60-405,508

### **Summary of the invention;**

The SoftChip modem incorporates Handel-C, an ultra-fast programming language, designed around a simple timing model that makes it very accessible to system architects and software engineers. Handel-C was developed at Oxford University's Computing Laboratory and will allow electronic devices to be instantly programmed and indefinitely reprogrammed to perform any number of different functions. Its novel "software compiler" system operates in conjunction with a new generation of FPGA, or Field Programmable Gate Array< chips. A microprocessor has a fixed number of functions that cannot be altered after manufacture. FPGA chips possess an almost limitless range of functions and flexibility.

The SoftChip modem functions as a line splitter, can be reprogrammed as needed versus re-engineered, provides new functionality via software downloads, on analog lines as well as cable, satellite and fiber lines. This is not a temporary interruption, to provide service, but simultaneous use of the line.

The attached flow chart and block design describes the Soft Chip modem aimed to provide the simultaneous transmission of two, or more, speech or data calls and to provide flexible deployment of value added services implemented on plain old telephone service (POTS) lines.

To provide simultaneous transmission of two or more speech or data calls conventional analog voice traffic is compressed to occupy less bandwidth, thus freeing up the remaining bandwidth for additional voice or data traffic. A speech compression algorithm that provides sufficient quality of sound and requires only between 5.6 and 6.4kbps of bandwidth is embedded within the SoftChip system.

To provide flexible deployment of value added services implemented on phone connections, the SoftChip modem incorporates Field Programmable Gate Array (FPGA) chips, hosting downloadable logic.

The SoftChip system is connected to a conventional copper line by an internal COTS modem. This would support two speech calls plus protocol overhead and be implemented as a plug-in board with a common interface that can be used for more powerful modems including digital ISDN and ADSL.

In one embodiment, a pair of SoftChip modems is used, one at each end of the analog link; the first compresses and multiplexes the data at the source end of the line, the second de-multiplexes and expands the data at the exchange end of the copper link.

### **Brief Description of drawings;**

**Figure 1;** a flow chart illustrating and embodiment of the present invention.

**Figure 2;** a block diagram illustrating the present invention.